

of vapor piping before the facility vapor connection must be:

- (1) Painted red/yellow/red with:
 - (i) The red bands 0.1 meter (0.33 feet) wide, and
 - (ii) The middle yellow band 0.8 meter (2.64 feet) wide; and
- (2) Labeled "VAPOR" in black letters at least 50 millimeters (2 inches) high.
- (c) Each facility vapor connection flange must have a permanently attached 0.5 inch diameter stud at least 1.0 inch long projecting outward from the flange face. The stud must be located at the top of the flange, midway between bolt holes, and in line with the bolt hole pattern.
- (d) Each hose used for transferring vapors must:
 - (1) Have a design burst pressure of at least 25 psig;
 - (2) Have a maximum allowable working pressure of at least 5 psig;
 - (3) Be capable of withstanding at least 2.0 psi vacuum without collapsing or constricting;
 - (4) Be electrically continuous with a maximum resistance of ten thousand (10,000) ohms;
 - (5) Have flanges with:
 - (i) A bolt hole arrangement complying with the requirements for 150 pound class ANSI B16.5 (incorporated by reference; see § 154.106) flanges, and
 - (ii) One or more 0.625 inch diameter holes in the flange located midway between bolt holes and in line with the bolt hole pattern;
 - (6) Be abrasion resistant and resistant to kinking; and
 - (7) Have the last 1.0 meter (3.3 feet) of each end of the vapor hose marked in accordance with paragraph (b) of this section.
- (e) Vapor hose handling equipment must be provided with hose saddles which provide adequate support to prevent kinking or collapse of hoses.
- (f) Fixed vapor collection arms must:
 - (1) Meet the requirements of paragraphs (d)(1) through (d)(5) of this section;
 - (2) Have the last 1.0 meter (3.3 feet) of the arm marked in accordance with paragraph (b) of this section.
- (g) The facility vapor connection must be electrically insulated from the vessel vapor connection in accordance with section 6.10 of the OCIMF Inter-

national Safety Guide for Oil Tankers and Terminals (incorporated by reference; see § 154.106).

(h) A vapor collection system fitted with an enriching system that operates at a positive gauge pressure at the facility vapor connection must be fitted with:

- (1) A manual isolation valve between each facility vapor connection and the remotely operated cargo vapor shutoff valve required by paragraph (a) of this section; and
- (2) A means to prevent backflow of enriched vapor to the vessel's vapor collection system.

[CGD 88-102, 55 FR 25429, June 21, 1990, as amended by USCG-2001-8661, 74 FR 45023, Aug. 31, 2009]

§ 154.812 Facility requirements for vessel liquid overfill protection.

(a) Each facility which receives cargo vapor from a tank barge which is fitted with overfill protection in accordance with 46 CFR 39.20-9(a) as its only means of overfill protection must provide a 120 volt, 20 amp explosion proof receptacle which meets:

- (1) ANSI/NEMA WD6 (incorporated by reference; see § 154.106);
- (2) NFPA 70, National Electrical Code, Articles 410-57 and 501-12; incorporated by reference; see § 154.106); and
- (3) 46 CFR 111.105-9.

(b) Each facility that receives cargo vapor from a tank barge fitted with an intrinsically safe cargo tank level sensor system complying with 46 CFR 39.20-9(b) as its only means of overfill protection must have an overfill control panel on the dock capable of powering and receiving an alarm and shutdown signal from the cargo tank level sensor system that:

- (1) Closes the remotely operated cargo vapor shutoff valve required by § 154.810(a) of this subpart and activates the emergency shutdown system required by § 154.550 of this part when:
 - (i) A tank overfill signal is received from the barge, or
 - (ii) Electrical continuity of the cargo tank level sensor system is lost;
- (2) Activates an alarm which is audible and visible to barge personnel and facility personnel when a tank overfill signal, or an optional high level signal corresponding to a liquid level lower

than the tank overfill sensor setting, is received from the barge;

(3) Has a means to electrically and mechanically test the alarms and automatic shutdown systems prior to transferring cargo to or ballasting the tank barge;

(4) Has suitable means, such as approved intrinsic safety barriers able to accept passive devices, to ensure that the overfill and optional alarm circuits on the barge side of the overfill control panel, including cabling, normally closed switches, and pin and sleeve connectors, are intrinsically safe;

(5) Is labeled with the maximum allowable inductance and capacitance to be connected to the panel, as specified by the equipment manufacturer; and

(6) Has a female connecting plug for the tank barge level sensor system with a 5 wire, 16 amp connector body meeting IEC 309-1/309-2 (incorporated by reference; see § 154.106) which is:

(i) Configured with pins S2 and R1 for the tank overfill sensor circuit, pin G connected to the cabling shield, and pins N and T3 reserved for an optional high level alarm connection;

(ii) Labeled “Connector for Barge Overflow Control System”; and

(iii) Connected to the overfill control panel by a shielded flexible cable.

[CGD 88-102, 55 FR 25429, June 21, 1990, as amended by USCG-2001-8661, 74 FR 45023, Aug. 31, 2009]

§ 154.814 Facility requirements for vessel vapor overpressure and vacuum protection.

(a) A facility’s vapor collection system must have the capacity for collecting cargo vapor at a rate of not less than 1.25 times the facility’s maximum liquid transfer rate for cargo for which vapor collection is required plus any inerting, diluting, or enriching gas which may be added to the system, unless the vapor growth for turbulent loading of the most volatile liquid handled by the facility is less than 25 percent.

(b) A facility vapor collection system must maintain the pressure in a vessel’s cargo tanks between 80 percent of the highest setting of any of the vessel’s vacuum relief valves and 80 percent of the lowest setting of any of the vessel’s pressure relief valves for a non-

inerted tank vessel, and between 0.2 psig and 80 percent of the lowest setting of any of the vessel’s pressure relief valves for an inerted tank vessel. The system must be capable of maintaining the pressure in the vessel’s cargo tanks within this range at any cargo transfer rate less than or equal to the maximum transfer rate determined at the pre-transfer conference required by § 156.120(w) of this chapter.

(c) The pressure measured at the facility vapor connection must be corrected for pressure drops across the vessel’s vapor collection system and the vapor collection hose or arm.

(d) A pressure sensing device must be provided which activates an alarm when the pressure at the facility vapor connection exceeds either the pressure corresponding to the upper pressure determined in paragraph (b) of this section or a lower pressure agreed upon at the pre-transfer conference required by § 156.120(w) of this chapter.

(e) A pressure sensing device must be provided which activates an alarm when the pressure at the facility vapor connection falls below either the pressure corresponding to the lower pressure determined in paragraph (b) of this section or a higher pressure agreed upon at the pre-transfer conference required by § 156.120(w) of this chapter.

(f) A pressure sensing device must be provided which activates the emergency shutdown system required by § 154.550 of this part and closes the remotely operated cargo vapor shutoff valve required by § 154.810(a) of this subpart when the pressure at the facility vapor connection exceeds 2.0 psi, or a lower pressure agreed upon at the pre-transfer conference required by § 156.120(w) of this chapter. The sensing device must be independent of the device used to activate the alarm required by paragraph (d) of this section.

(g) A pressure sensing device must be provided which closes the remotely operated cargo vapor shutoff valve required by § 154.810(a) of this subpart when the vacuum at the facility vapor connection is more than 1.0 psi, or a lesser vacuum set at the pre-transfer conference required by § 156.120(w) of this chapter. The sensing device must be independent of the device used to